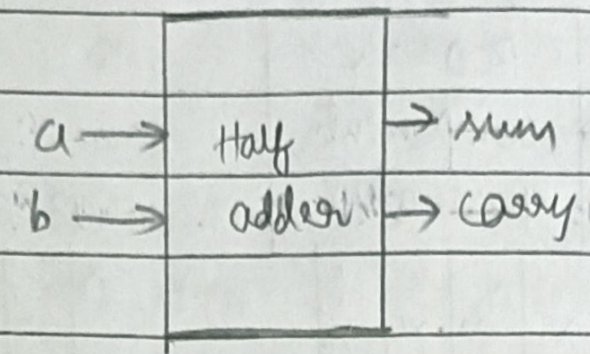


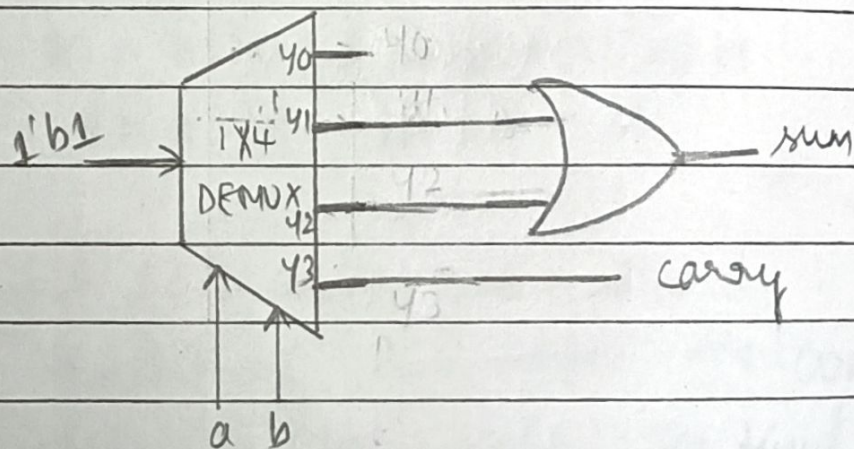
HALF ADDER USING 1X4 DEMUX



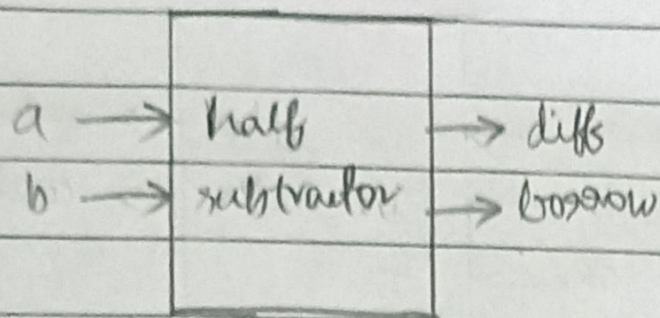
a	b	sum	carry
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

sum = $a \oplus b$

carry = ab



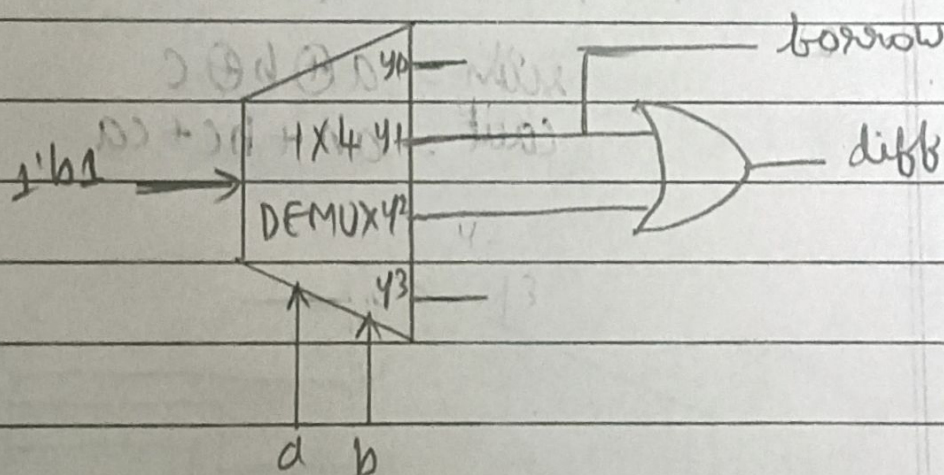
HALF SUBTRACTOR USING 1X4 DEMUX



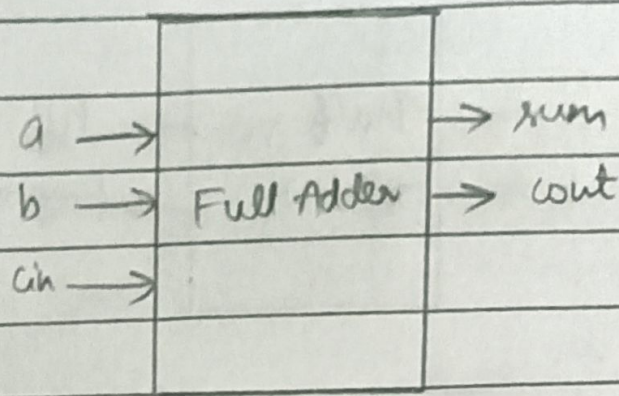
a	b	diffs	borrow
0	0	0	0
0	1	1	1
1	0	1	0
1	1	0	0

$$\text{diffs} = a \oplus b$$

$$\text{borrow} = \bar{a}b$$



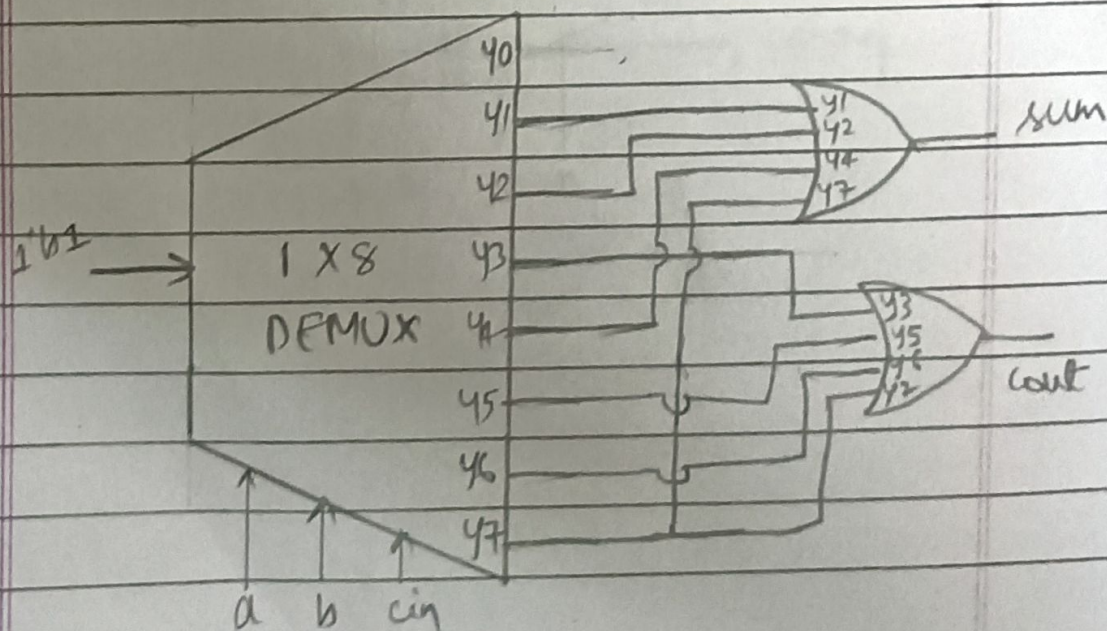
FULL ADDER USING 1X8 DEMUX



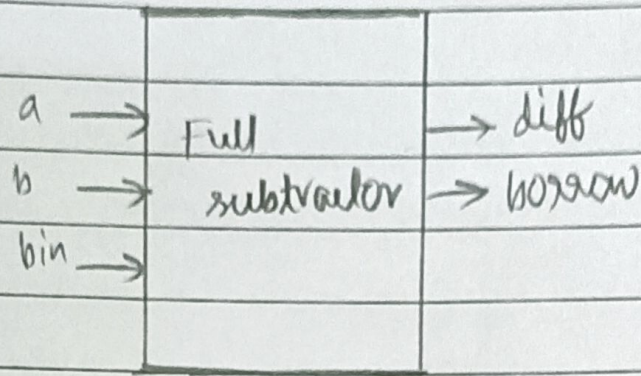
a	b	c_{in}	sum	$cout$
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

$$sum = a \oplus b \oplus c$$

$$cout = ab + bc + ca$$



FULL SUBTRACTOR USING 1X8 DEMUX



a	b	bin	$diff$	$borrow$
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1
0	1	1	0	1
1	0	0	1	0
1	0	1	0	0
1	1	0	0	0
1	1	1	1	1

$$diff = a \oplus b \oplus bin$$

$$borrow = \bar{a}b + bbin + \bar{a}bin$$

